

Application No. 09/870,442  
Attorney Docket No. 7991.0006-00000

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions and listings of claims in the application:

44. (currently amended) A method for improving the high and low shear rheology of a substantially grit-free and substantially fluid particulate suspension ~~comprising kaolin clay~~, the method comprising the steps of:

~~providing a particulate suspension having an initial apparent Hercules viscosity and an initial Brookfield viscosity; and~~

processing the suspension a particulate suspension having an initial apparent Hercules viscosity and an initial Brookfield viscosity in a rotor-stator mill to produce a product having a final apparent Hercules viscosity and a final Brookfield viscosity,

wherein at least one of said final apparent Hercules viscosity and said final Brookfield viscosity is at least 30% lower than said respective corresponding initial apparent Hercules or Brookfield viscosity,

and wherein said final Brookfield viscosity is at least 30% lower than said initial Brookfield low-shear viscosity.

45. (previously presented) The method of Claim 44, wherein said particulate suspension has a solids content in the range of from about 10% to about 75% by weight.
46. (previously presented) The method of Claim 44, wherein said particulate suspension has a solids content in the range of from about 55% to about 70% by weight.

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47. (previously presented) The method of Claim 44, wherein said particulate suspension has a solids content in the range of from about 35% to about 75% by weight.
48. (previously presented) The method of Claim 44, wherein said final apparent Hercules viscosity is at least 30% lower than said initial apparent Hercules viscosity.
49. (previously presented) The method of Claim 44, wherein said final apparent Hercules viscosity is at least 46% lower than said initial apparent Hercules viscosity.
50. (previously presented) The method of Claim 44, wherein said final apparent Hercules viscosity is at least 59% lower than said initial apparent Hercules viscosity.
51. (currently amended) A method for improving the high and low shear rheology of a substantially grit-free and substantially fluid particulate suspension, the method comprising:  
processing a particulate suspension having an initial apparent Hercules viscosity and an initial Brookfield viscosity in a rotor-stator mill to produce a product having a final apparent Hercules viscosity and a final Brookfield viscosity,  
wherein at least one of said final apparent Hercules viscosity and said final Brookfield viscosity is at least 30% lower than said respective corresponding initial apparent Hercules or Brookfield viscosity.

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~~The method of Claim 44~~, wherein said final apparent Hercules viscosity is at least 73% lower than said initial apparent Hercules viscosity.

52. (canceled)

53. (previously presented) The method of Claim 44, wherein said final Brookfield viscosity is at least 36% lower than said initial Brookfield viscosity.

54. (previously presented) The method of Claim 44, wherein said final Brookfield viscosity is at least 70% lower than said initial Brookfield viscosity.

55. (previously presented) The method of Claim 44, wherein said final Brookfield viscosity is at least 30% lower than said initial Brookfield viscosity and said final apparent Hercules viscosity is at least 46% lower than said initial apparent Hercules viscosity.

56. (previously presented) The method of Claim 44, wherein said final Brookfield viscosity is at least 36% lower than said initial Brookfield viscosity and said final apparent Hercules viscosity is at least 73% lower than said initial apparent Hercules viscosity.

57. (previously presented) A method for improving the high and low shear rheology of a substantially grit-free and substantially fluid particulate suspension, the method comprising:

processing a particulate suspension having an initial apparent Hercules viscosity and an initial Brookfield viscosity in a rotor-stator mill to produce a product having a final apparent Hercules viscosity and a final

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Brookfield viscosity.

wherein at least one of said final apparent Hercules viscosity and said final Brookfield viscosity is at least 30% lower than said respective corresponding initial apparent Hercules or Brookfield viscosity, and

~~The method of Claim 44~~ wherein the suspension is substantially dispersed in a dispersant and water at an alkaline pH before it is milled in the rotor-stator mill.

58. (previously presented) The method of Claim 57 wherein the suspension is substantially dispersed in sodium polyacrylate, soda ash and water.
59. (previously presented) The method of Claim 57 wherein the suspension is substantially dispersed at a pH of greater than 6.0, as measured by a in-process pH method.
60. (previously presented) The method of Claim 44 wherein the mill for processing the suspension is a Kady-type mill.
61. (previously presented) The method of Claim 44 wherein the mill for processing the suspension includes a conically shaped stator and a corresponding conically shaped rotor.
62. (previously presented) The method of Claim 44 wherein the mill for processing the suspension includes a stator and correspondingly shaped rotor which defines a gap that is adjustable to provide optimum efficiency as the suspension is processed to produce the product.

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63. (previously presented) The method of Claim 44 further comprising the step of benefiting the suspension or product.
64. (previously presented) The method of Claim 44 further comprising the step of at least partially dewatering the product.
65. (previously presented) The method of Claim 64 wherein said partial dewatering step yields a dewatered product having up to about 75% solids.
66. (currently amended) A method for improving the high and low shear rheology of a substantially grit-free and substantially fluid particulate suspension, the method comprising:  
processing a particulate suspension having an initial apparent Hercules viscosity and an initial Brookfield viscosity in a rotor-stator mill to produce a product having a final apparent Hercules viscosity and a final Brookfield viscosity,  
wherein at least one of said final apparent Hercules viscosity and said final Brookfield viscosity is at least 30% lower than said respective corresponding initial apparent Hercules or Brookfield viscosity,  
wherein said final Brookfield viscosity is at least 30% lower than said initial Brookfield low-shear viscosity,  
further comprising the step of at least partially dewatering the product, and  
~~The method of Claim 64 further comprising the step of re-milling the~~  
partially dewatered product.

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67. (currently amended) A method for improving the high and low shear rheology of a substantially grit-free and substantially fluid particulate suspension, the method comprising:

processing a particulate suspension having an initial apparent Hercules viscosity and an initial Brookfield viscosity in a rotor-stator mill to produce a product having a final apparent Hercules viscosity and a final Brookfield viscosity,

wherein at least one of said final apparent Hercules viscosity and said final Brookfield viscosity is at least 30% lower than said respective corresponding initial apparent Hercules or Brookfield viscosity,

further comprising the step of at least partially dewatering the product,

The method of Claim 64 wherein additional water is removed from the partially dewatered product by the process of spray drying.

68. (previously presented) The method of Claim 44, wherein the particulate comprises a kaolin clay.
69. (previously presented) The method of Claim 44 wherein the particulate comprises a calcined kaolin clay.
70. (previously presented) The method of Claim 44 wherein the particulate comprises calcium carbonate.
71. (previously presented) The method of Claim 44 wherein the particulate comprises precipitated calcium carbonate .

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72. (previously presented) The method of Claim 44 wherein the particulate comprises a material chosen from the group consisting of synthetic silica, a synthetic silicate, and an aluminosilicate.
73. (previously presented) The method of Claim 44 wherein the particulate is formed by a direct precipitation process.
74. (currently amended) The method of Claim 44, wherein said particulate comprises a kaolin clay having a Brookfield viscosity of ~~less than 210~~ at least 305 cP at 20 RPM and ~~67~~ 70% solids.
75. (previously presented) The method of Claim 44, wherein said particulate comprises a hydrous clay having an apparent Hercules viscosity of ~~less than 593~~ at least 391 cP at 20 RPM and ~~70%~~ 67% solids.
76. (previously presented) The method of Claim 44, wherein said particulate comprises a delaminated or naturally platy clay having a Brookfield viscosity of ~~less than 305~~ at least 475 cP at 20 RPM as measured at ~~65%~~ 70% solids.
77. (previously presented) The method of Claim 44, wherein said particulate comprises a delaminated or naturally platy clay having an apparent Hercules viscosity of ~~less than 391~~ at least 382 cP as measured at ~~65%~~ 70% solids.
78. (previously presented) A product made by the method of Claim 44.

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79. (New) Th m thod of Claim 44, wherein said particulate comprises a delaminated or naturally platy clay having a Brookfield viscosity of at least 1090 cP at 20 RPM and 65% solids.

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